



DEPARTMENT OF
ECOLOGY
State of Washington

**Technical Support Document for
Prevention of Significant Deterioration
Permit No. 91-02, Amendment 4**

**Puget Sound Energy
Encogen Generating Station**

January 2021

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1. Executive Summary

On September 11, 2020, Ecology issued PSD No. 91-02, Amendment 3 to approve several permit condition changes as requested by Puget Sound Energy.

One of the approved changes is to clarify that the short-term emission limits for nitrogen oxide (NO_x) do not apply during start-up and shutdown.

However, while this change was discussed extensively in the permitting records, including the technical support document and project description, the clarification was inadvertently missed from the approval conditions.

This permit amendment is to add the clarification as originally intended in PSD No. 91-02, Amendment 3.

2. Site Description

Puget Sound Energy (PSE) Encogen Generating Station is located at 915 Cornwall Avenue, Bellingham, Washington, east of the Port of Bellingham's waterfront redevelopment. PSE assumed complete ownership of the facility in November 1999. The plant was originally constructed and operated by the Enserch Development Corporation.

The facility consists of three combustion gas turbine (GE Frame 6, Model MS6001B) generator systems and associated heat recovery steam generators (HRSGs) and exhaust gas treatment, a steam turbine-generator system, fuel oil storage, an electrical switchyard, and equipment for feed water treatment. See the facility's aerial photograph in Figure 1. The facility is located in a Class II area that is designated as "attainment or unclassifiable" for the purpose of PSD permitting for all pollutants.



Figure 1: PSE Encogen Generating Station aerial photograph

3. Explanation of Changes

In the original request, PSE explained that during start-up/shutdown, the exhaust temperature is insufficient to allow for the utilization of steam injection and the selective catalytic reduction (SCR) for NO_x control. Therefore, NO_x concentration during start-up/shutdown in some cases exceed the 7 ppm daily average limit.

Ecology approved PSE's request and discussed the review extensively in the technical support document and the project description of PSD No. 91-02, Amendment 3. Ecology also clearly showed in the draft permit shared with the applicant that the NO_x emission limit in Approval Condition 2 shall not apply during start-up and shutdown. However, the language was inadvertently missing from the permit due to administrative error.

Therefore, this amendment will reflect the following changes.

Table 1: Permit Amendment Changes

Condition 2 Permit Change	
From	To
<p>The NO_x emissions from each exhaust stack of the combined cycle combustion turbine (CCCT) shall not exceed:</p> <ul style="list-style-type: none"> a. 7.0 parts per million on a dry volume basis (ppmdv) corrected to 15 percent oxygen on calendar day average when the unit is fired on natural gas. b. 11.0 ppmdv corrected to 15 percent oxygen on calendar day average when the unit is fired on oil. 	<p>The NO_x emissions from each exhaust stack of the combined cycle combustion turbine (CCCT) shall not exceed:</p> <ul style="list-style-type: none"> a. 7.0 parts per million on a dry volume basis (ppmdv) corrected to 15 percent oxygen on calendar day average when the unit is fired on natural gas. b. 11.0 ppmdv corrected to 15 percent oxygen on calendar day average when the unit is fired on oil. <p>The emission limits in this condition do not apply during start-up and shutdown events.</p>
Condition 3 Permit Change	
From	To
<p>NO_x emissions from the three combined cycle combustion turbines (CCCTs) combined shall not exceed:</p> <ul style="list-style-type: none"> a. 1,000 pounds per day when fired on natural gas. b. 1,605 pounds per day when fired on oil. c. 175 tons in any consecutive 12 months. 	<p>NO_x emissions from the three combined cycle combustion turbines (CCCTs) combined shall not exceed:</p> <ul style="list-style-type: none"> a. 1,000 pounds per day when fired on natural gas. b. 1,605 pounds per day when fired on oil. c. 175 tons in any consecutive 12 months. <p>The emission limits in this condition apply at all times, including start-up and shutdown.</p>

4. Conclusion

Ecology concludes that the changes made to the permit do not authorize any changes in any emission units or result in any changes to emissions. The changes to the PSD permit are to correct an administrative error.

For this reason, Ecology is issuing the amended PSD permit as an administrative amendment, which is not subject to public notice and review requirements.

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